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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Guenter Wolff

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EXAMINER

HUFTY, JOHN PAGE

ART UNIT

PAPER NUMBER

3747

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/580,994	Applicant(s) WOLFF ET AL.	
	Examiner J.PAGE HUFTY	Art Unit 3747	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-26 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 14-26 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/27/2006, 05/27/2006</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 14-17, 19-22 and 24, 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Reiners U.S. Patent 3,125,078. Applicant's claims are below with relevant citations.

14. (New) A fuel-injection system for the direct injection of fuel into a combustion chamber of an internal combustion engine (**col. 1 line 9+**), comprising:
a cylinder head in which fuel lines are positioned, the cylinder head having valve-receiving openings (**fig. 3; feature 12, 61, 62, 23**);
at least two fuel injectors situated in the valve-receiving openings, each of the fuel injectors having a fuel connector on a side thereof (**fig 3 and 5; col. 5 line 19+; claim 1**); wherein the fuel lines discharge into the valve-receiving openings and into the fuel connection located on the side of each fuel injector, and wherein the fuel lines are

interconnected in the cylinder head (**fig 3 and 5; feature 61, 76; col. 2 line 71+**).

15. (New) The fuel-injection system as recited in claim 14, wherein the fuel connection is situated on a level of a valve needle of each fuel injector (**fig 5; feature 40**).

16. (New) The fuel-injection system as recited in claim 14, wherein the fuel lines are interconnected via at least the valve-receiving openings and the fuel connections (**fig 3 and 5 feature 61, 71, 76; col. 5 line 19+**).

17. (New) The fuel-injection system as recited in claim 14, wherein each fuel connection has an outer first section and an inner second section, which is made up of at least one opening in the side of the fuel injector (**fig 5; feature 76**).

19. (New) The fuel-injection system as recited in claim 17, wherein the first section of the fuel connection has a form of an annular groove (**fig 3; feature 71**).

20. (New) The fuel-injection system as recited in claim 17, wherein the fuel lines are connected via at least the first section of a fuel injector (**fig 3 and 5; feature 61 and 71, 76**).

21. (New) The fuel-injection system as recited in claim 14, wherein the fuel lines form at least one fuel-line array of at least two fuel lines hydraulically connected in series, the

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fuel- line array supplying fuel to at least two fuel injectors (**fig 3; feature 61; col. 5 line 19+; claim 1**).

22. (New) The fuel-injection system as recited in claim 21, wherein the fuel lines of the fuel- line array at least one of: i) are positioned coaxially with respect to each other, and ii) exit through a shared borehole (**fig 3; feature 61**).

24. (New) The fuel-injection system as recited in claim 17, wherein the fuel connection has a filter (**fig 3; feature 73**).

25. (New) The fuel-injection system as recited in claim 24, wherein the filter is positioned around the first section in a form of a ring (**fig 3, 5 and 6; feature 73**).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reiners as applied to claim 17 above in view of Koseki U.S. Patent 6,807,946. To the

extent that Reiners does not expressly disclose the two openings of applicant's claims Koseki teaches this for the supply of fuel to a cylinder in an injection system **(Koseki: abstract)**.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to combine the disclosure of Reiners with the teaching of Koseki for the supply of fuel to a cylinder in a fuel injection system.

18. (New) The fuel-injection system as recited in claim 17, wherein the fuel lines are connected via at least two openings of the second section **(Reiners: fig 5, feature 76; Koseki: fig 3, feature 115)**.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reiners.

To the extent that Reiners does not expressly disclose the parallel fuel array structure of applicant's claims, this would have been obvious to one

of ordinary skill in the art given the application of the teaching of Reiners to conventionally known engine configurations such as a V-8.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reiners in view of Smith.

To the extent that Reiners does not expressly disclose the parallel fuel array structure of applicant's claims Smith teaches dual injectors per cylinder for improved fueling qualities **(Smith: column 1, line 38+)**.

A person of ordinary skill in the art would naturally run parallel fuel lines for the invention of Reiners if using a dual injector system as set forth in Smith.

Therefore the subject matter of applicant's claim would have been obvious to one of ordinary skill in the art at the time of invention given the teaching of Reiners and the disclosure of Smith. These references

combined for the benefit of improved fueling characteristics.

23. (New) The fuel-injection system as recited in claim 21, wherein at least two fuel-line arrays are hydraulically positioned in parallel (**Reiners: fig 3, feature 61; Smith: fig 2 feature 25a and 26a**).

Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reiners.

To the extent that Reiners has not detailed the construction of the filter element beyond a "screen" the subject matter of applicant's claims would have been obvious to one of ordinary skill in the art at the time of invention given the teaching of Reiners column 5 line 26+.

26. (New) The fuel-injection system as recited in claim 24, wherein the filter is one of: i) made up of a meshed web, or ii) made up of an annular piece of metal which is perforated by laser-drilled holes.

Claims 14-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reiners in view of Koseki.

To the extent that Reiners may vary in terminology and embodiment of applicant's claims, the subject matter of applicant's claims would have been obvious to one of ordinary skill in the art given the disclosure of Reiners and the teaching of Koseki which further refines and modernizes the invention of Reiners.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Any inquiry concerning this communication or earlier communications from the examiner should be directed to J.PAGE HUFTY whose telephone number is (571)272-9966. The examiner can normally be reached on 9:00 am - 5:00pm, Mon- Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen K. Cronin can be reached on 571-272-4536. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JPH

/J. Page Hufty/
Examiner, Art Unit 3747

/Stephen K. Cronin/
Supervisory Patent Examiner, Art Unit 3747